

Harm Reduction

A Framework For Effective & Compassionate
Security Guidance

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Blackhat 2022

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A painting depicting a dense, atmospheric interior of a library or a large study room. The space is filled with tall, narrow bookshelves packed with books. Numerous figures are scattered throughout the room, some sitting at long wooden tables covered with papers and books, while others stand near the shelves. The lighting is low and warm, coming from various sources like lamps and candles, which casts deep shadows and highlights the intricate details of the books and the people's faces. The overall mood is one of quiet concentration and historical depth.

Story time

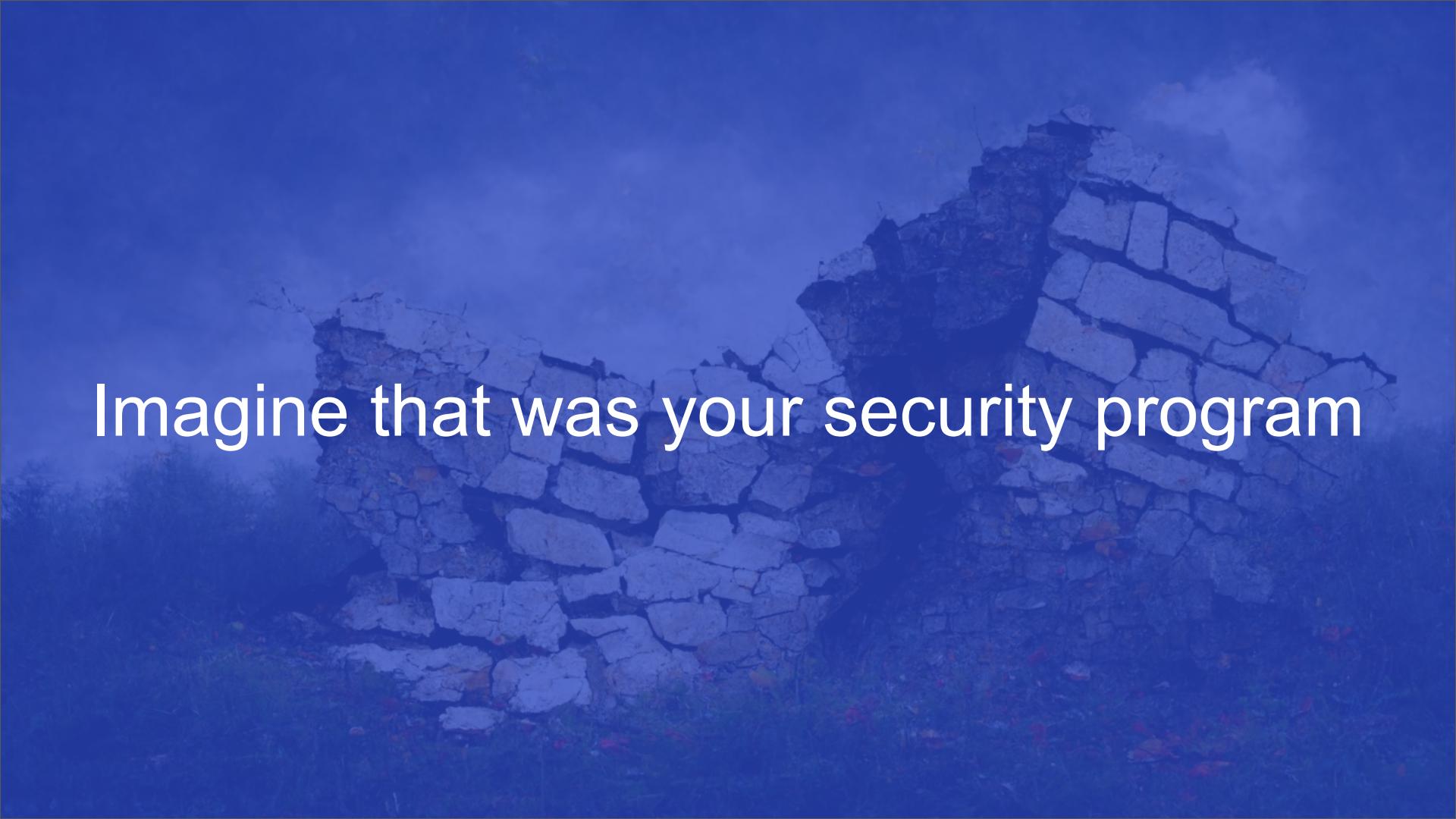


A painting of a group of teenagers gathered around a car at night. Some are leaning against the hood, others are sitting in the open driver's side door. They are all looking towards the right side of the frame. The scene is lit from above, creating strong shadows and highlights.

DARE, Every 15, and similar programs
likely increase alcohol intake.

A man and a woman are looking at a painting in a gallery. The man is on the left, wearing a blue jacket, and the woman is on the right, wearing a red dress. They are both looking at a painting of a woman in a blue dress.

Why am I telling you this?

A large, weathered stone wall stands in the foreground, its surface covered in deep cracks and patches of vegetation. A massive, jagged hole has been torn through the center of the wall, revealing a dark, smoky interior. The scene is set against a dark, hazy sky.

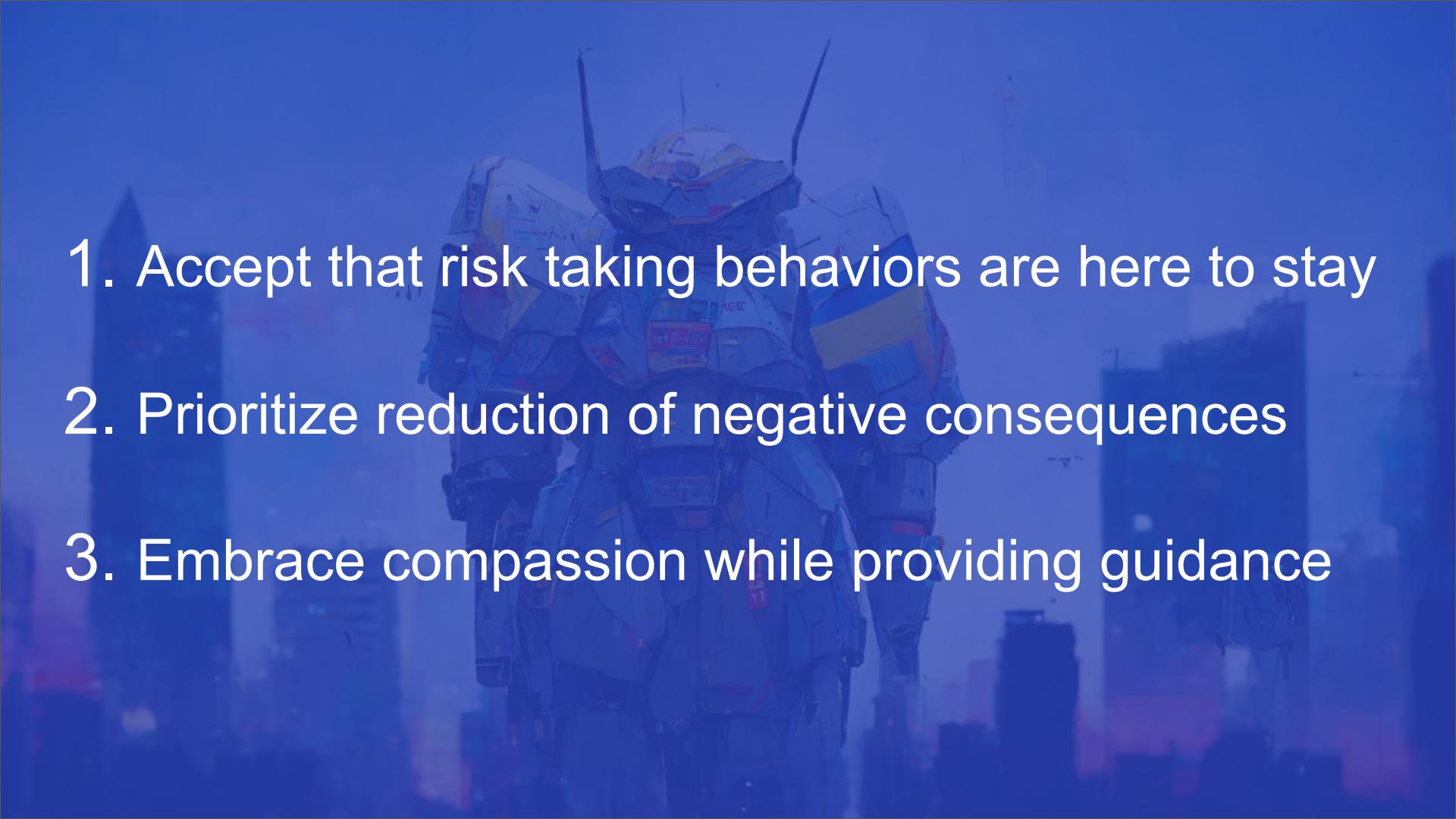
Imagine that was your security program

A dark, atmospheric landscape featuring a lone figure in traditional attire standing in a field of snow-covered, rounded mounds. The scene is set against a backdrop of dense, dark trees and a hazy sky.

I want to help you give
better security guidance

A photograph of a man with short brown hair and a beard standing on a stage. He is wearing a dark long-sleeved shirt and dark trousers. He is looking towards the camera. In front of him, the silhouettes of several people's heads are visible, suggesting an audience. The background is a large, brightly lit window or screen showing abstract shapes in red, blue, and white.

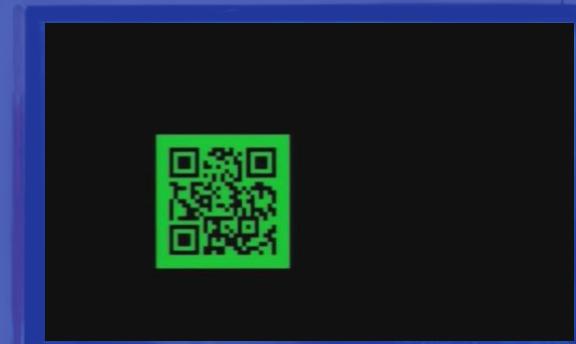
I'm Kyle, harm reduction enthusiast

- 
- A large, blue-toned mecha stands prominently in the center of a city street at night. The mecha has a complex, metallic design with various panels, armaments, and glowing elements. It appears to be a mobile suit or a similar type of mech. The background shows blurred city lights and buildings, creating a futuristic and somewhat dystopian atmosphere.
1. Accept that risk taking behaviors are here to stay
 2. Prioritize reduction of negative consequences
 3. Embrace compassion while providing guidance

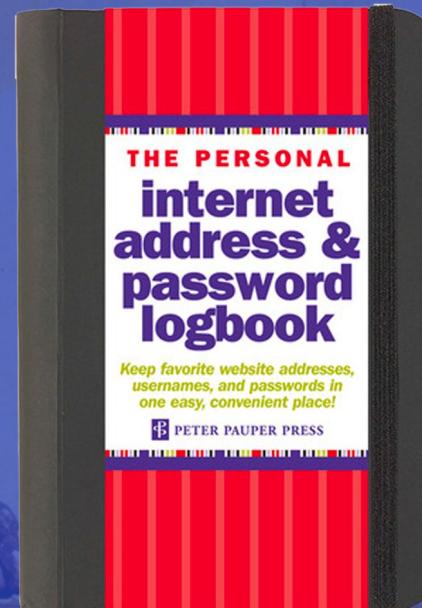
The background of the slide features a wide-angle photograph of a rugged mountain range under a hazy sky. A distinct, light-colored stone path or ridge winds its way from the foreground towards the center of the frame, where several sharp, rocky peaks rise against the mist.

Let's talk security guidance

Example #1



Example #2



Example #3



A photograph of a woman in a blue hooded coat standing next to a large blue barrel. She is reaching up towards the top of the barrel. The background is dark and appears to be an outdoor wall.

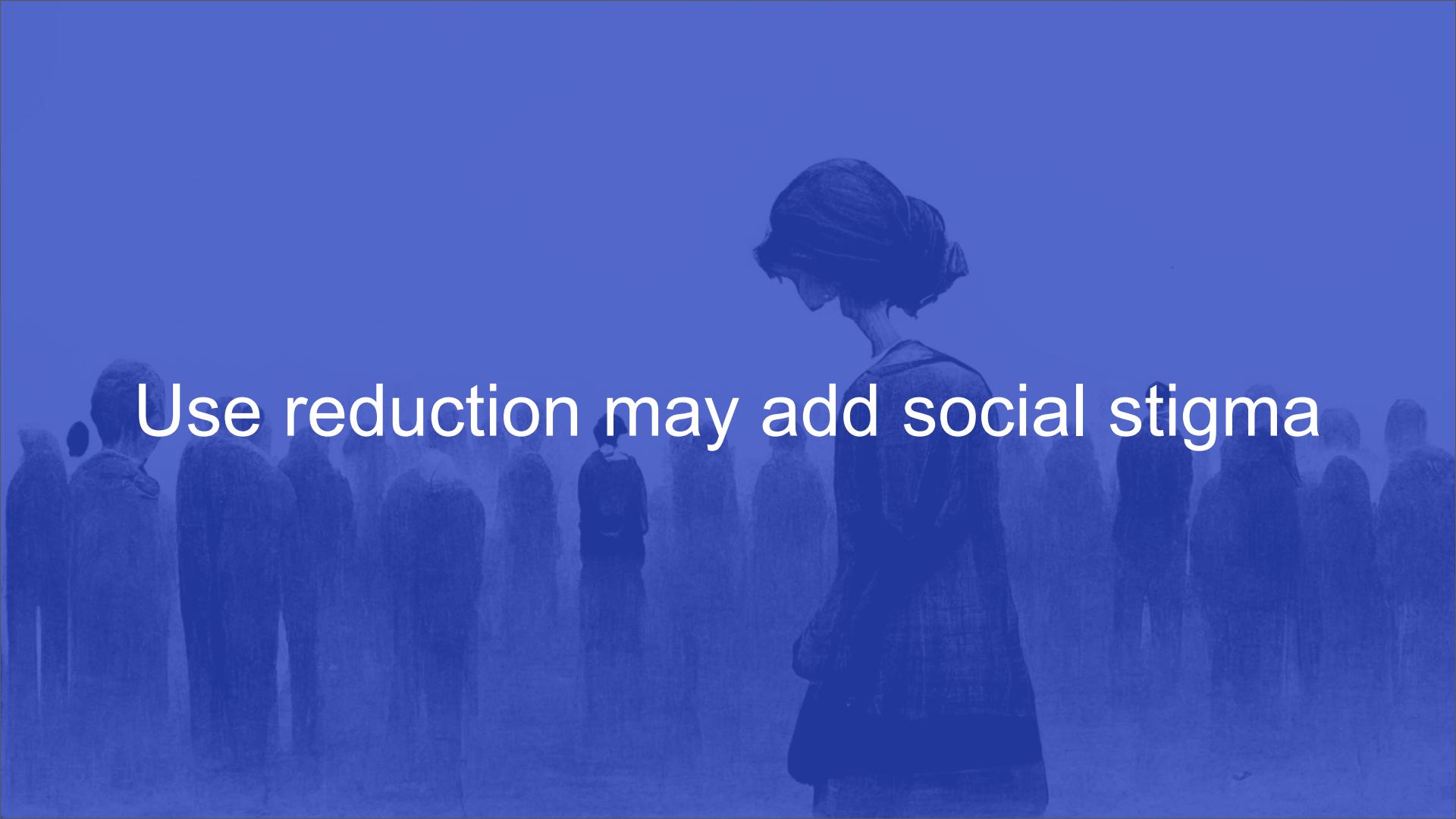
This is use reduction



What's the harm?

The background of the slide is a dark blue color. In the center, there is a large, open wooden treasure chest. The chest is filled with numerous shiny, metallic coins of various sizes and colors, including silver, gold, and copper. The chest is surrounded by more scattered coins on the floor and walls, creating a sense of a hidden treasure trove.

Nothing done about original incentives

A dark, moody photograph showing a large crowd of people from behind. In the foreground, a person's profile is visible, looking down. The overall atmosphere is somber and contemplative.

Use reduction may add social stigma



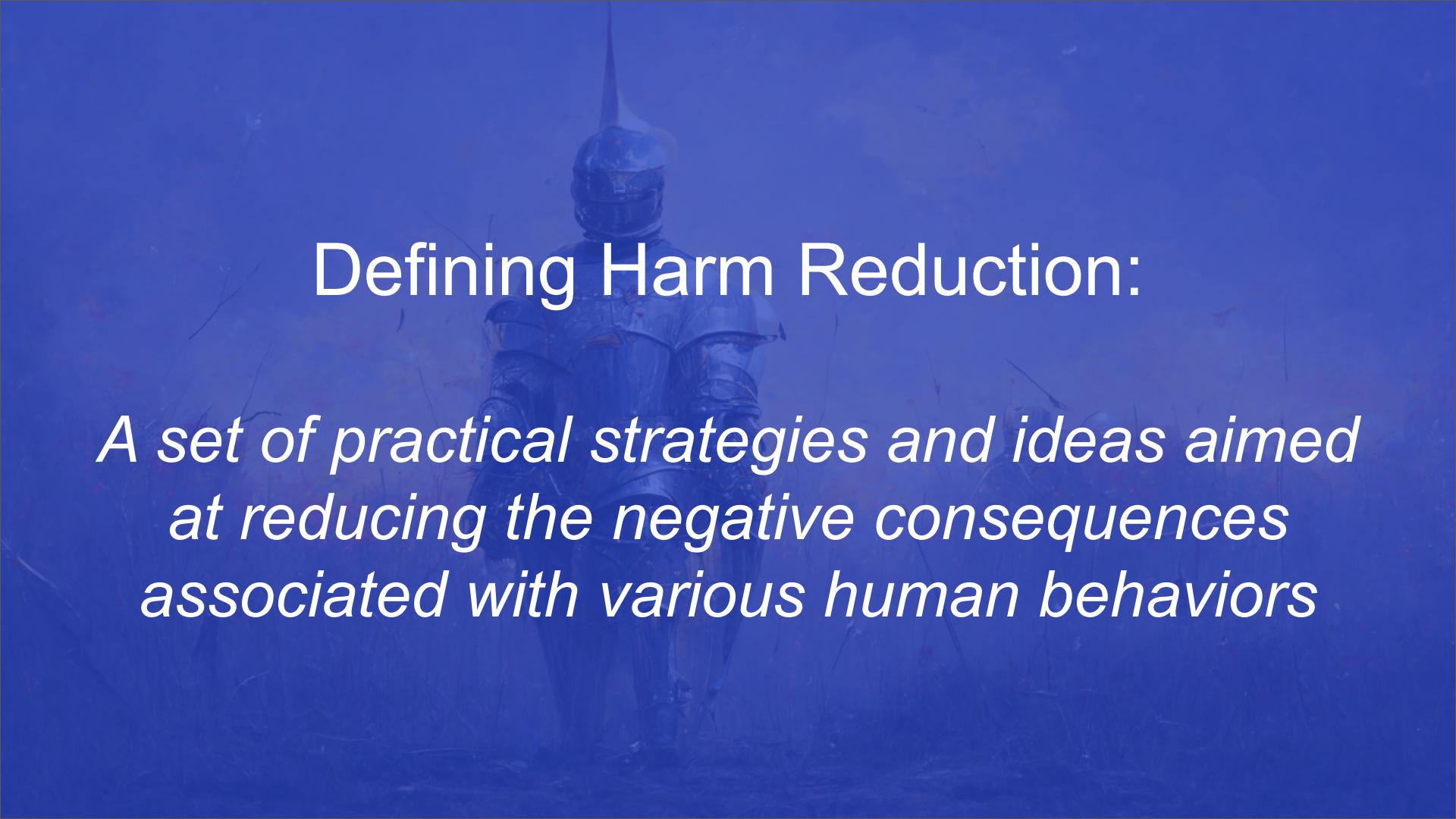
Behaviors may have community impact



latrogenesis



Harm Reduction Enters The Chat

A knight in full armor stands in a field of tall grass under a cloudy sky. The armor is dark and reflective, and the knight's helmet has a tall plume. The background is a soft-focus landscape.

Defining Harm Reduction:

A set of practical strategies and ideas aimed at reducing the negative consequences associated with various human behaviors

A clear plastic container, possibly a syringe disposal unit, is shown in the foreground. It is filled with numerous used syringes of various sizes, some with red markings. The container is set against a dark, textured background.

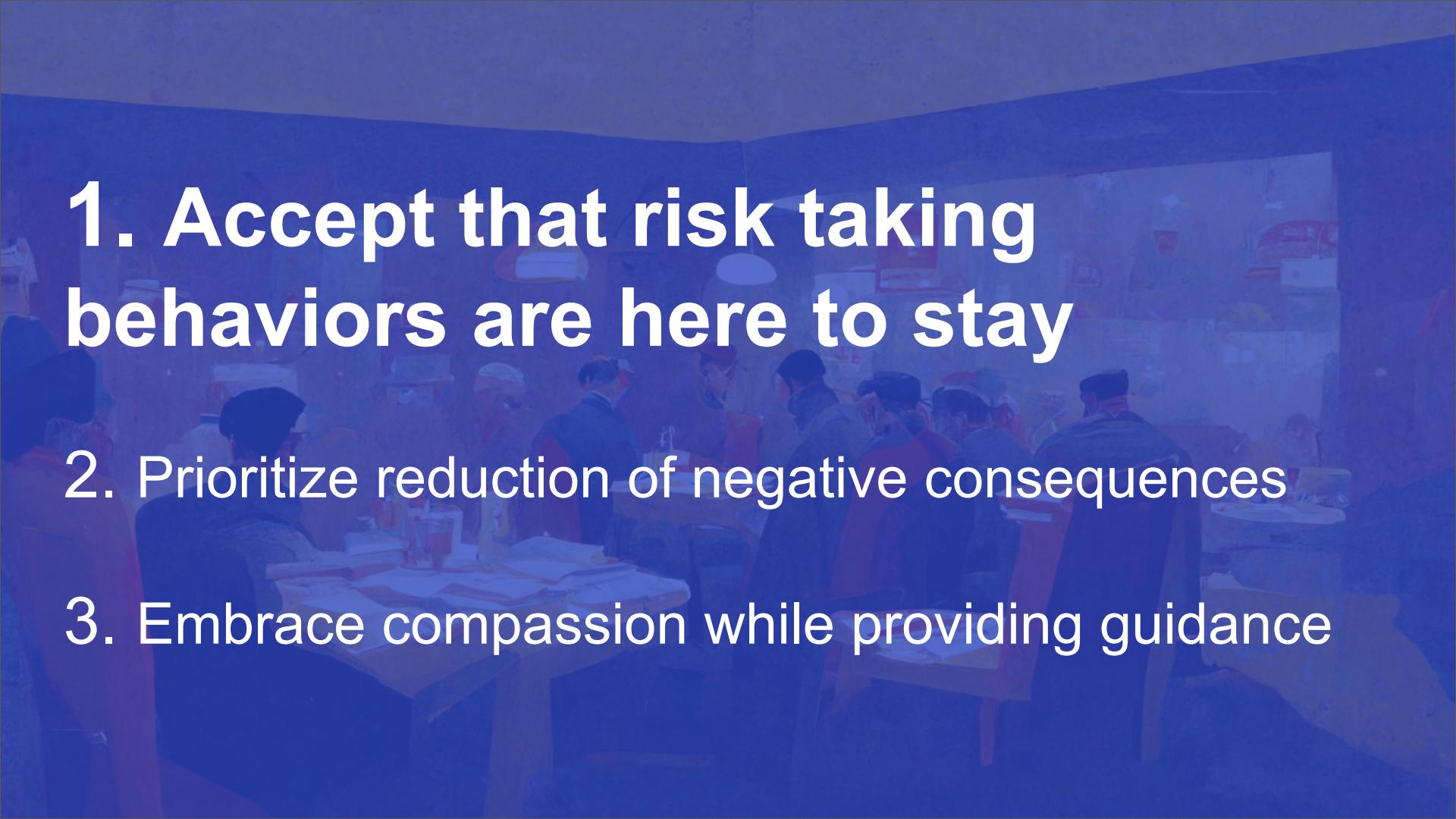
Origins of Harm Reduction

The background of the slide is a dark, moody landscape featuring a field of tall grass and red flowers. In the center foreground, a single stop sign stands on a pole. The sign is circular with a red border and features the word "STOP" in white capital letters. The overall lighting is low, creating a somber and reflective atmosphere.

Note: use reduction still relevant

A photograph showing a person from behind, wearing a blue long-sleeved shirt and dark pants, using a long-handled roller to paint a light-colored wall. To the left, there is a row of tall, vertical concrete panels. The scene is set outdoors, possibly in an industrial or construction area.

Applying Harm Reduction to Security

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- A photograph showing a group of people, likely students, sitting at desks in a classroom. They are focused on their work, with papers and books visible on the desks. The scene is lit with warm, natural light.
1. Accept that risk taking behaviors are here to stay
 2. Prioritize reduction of negative consequences
 3. Embrace compassion while providing guidance

A classroom scene with many children sitting at desks, all raising their right hands. The room is dimly lit with blue light, creating a dramatic atmosphere. In the foreground, a young boy with light brown hair is seen from behind, also raising his hand. The background shows more students and classroom furniture.

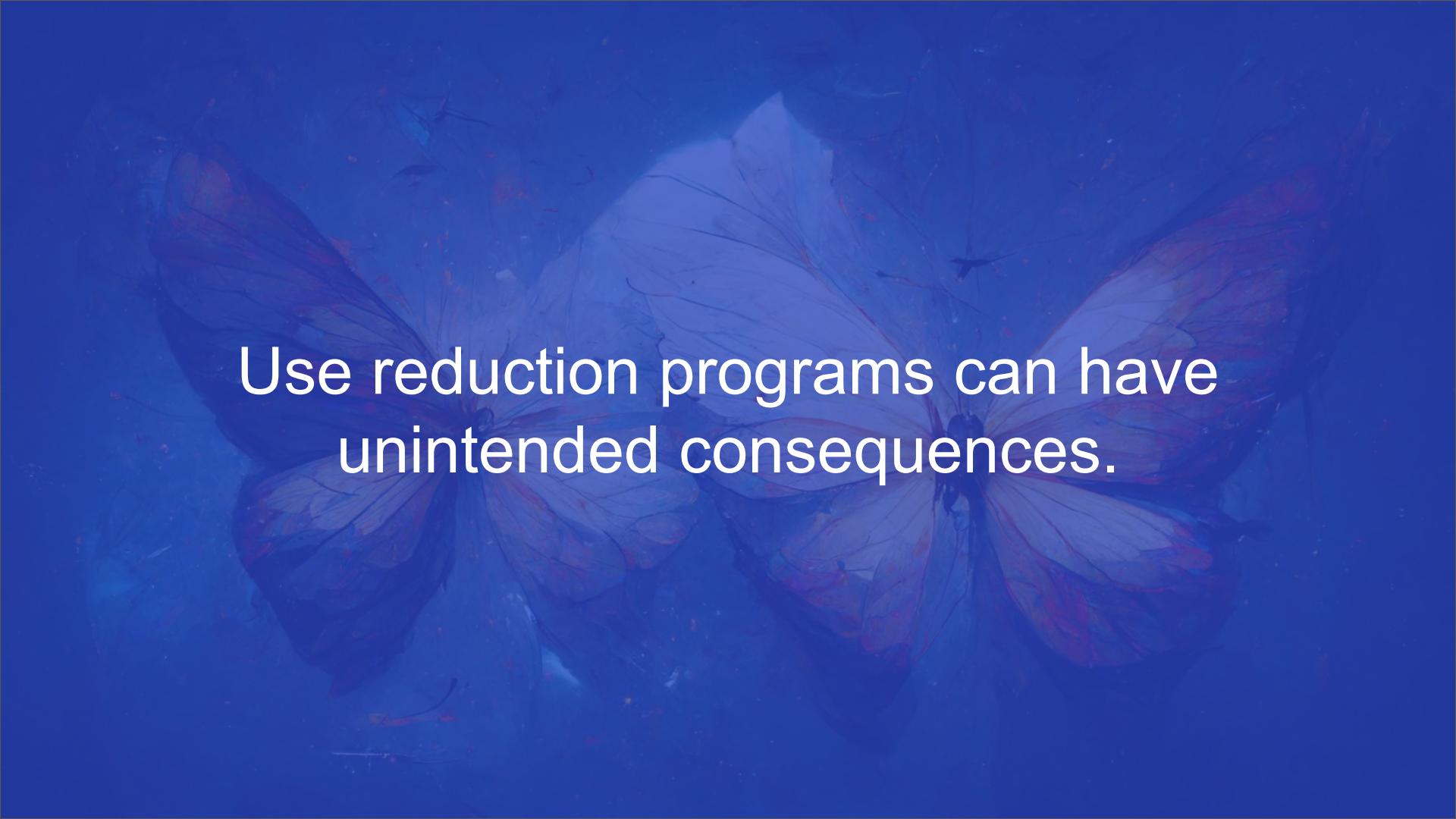
Why?

A man with a skull-like face is sitting in a chair, smoking a cigarette. He is wearing a tattered jacket and has a pipe in his mouth. The background is dark and smoky.

Risk taking behaviors occur for a reason

A man wearing a heavy-duty, padded suit made of light-colored material with dark straps and patches. He is standing in a dark, hazy environment, possibly a smoke-filled room or a space station module. The suit has a textured, rugged appearance.

Use Reduction Is Not Efficient



Use reduction programs can have
unintended consequences.



Iron Law of Prohibition

The background of the slide is a dark, atmospheric photograph showing several glass bottles of different sizes and shapes, some with red caps, scattered across a surface. In the foreground, there are small, colorful containers, possibly paint jars, and a few syringes. The lighting is low, creating deep shadows and highlights on the glass surfaces.

Abstinence violation effect

What does the research show?

- Alcohol Prohibition
 - Initial drop of 70% receded to 30% reduction over time.
 - Annual enforcement costs rose from \$6M to \$13M
- Teenage Pregnancy Prevention
 - Title V of the Social Security Act effectively guarantees >\$100 Million for abstinence based pregnancy prevention
 - 6 years of congressional research found no program had any significant impact on stopping or delaying sex.
- War on drugs
 - Since 1971 the United States spent > \$1 trillion dollars
 - Has not eradicated drug trade, potentially increased it.
- D.A.R.E.
 - Drug Abuse and Resistance Education program
 - Research shows it was entirely ineffective and in many cases increasing future harmful behaviors.

A dark, atmospheric background featuring a close-up of a Terminator T-800 endoskeleton's face. The robot's skin is dark and textured, with glowing red eyes that have a mechanical, multi-lens appearance. The lighting is low, emphasizing the metallic and organic textures of the endoskeleton.

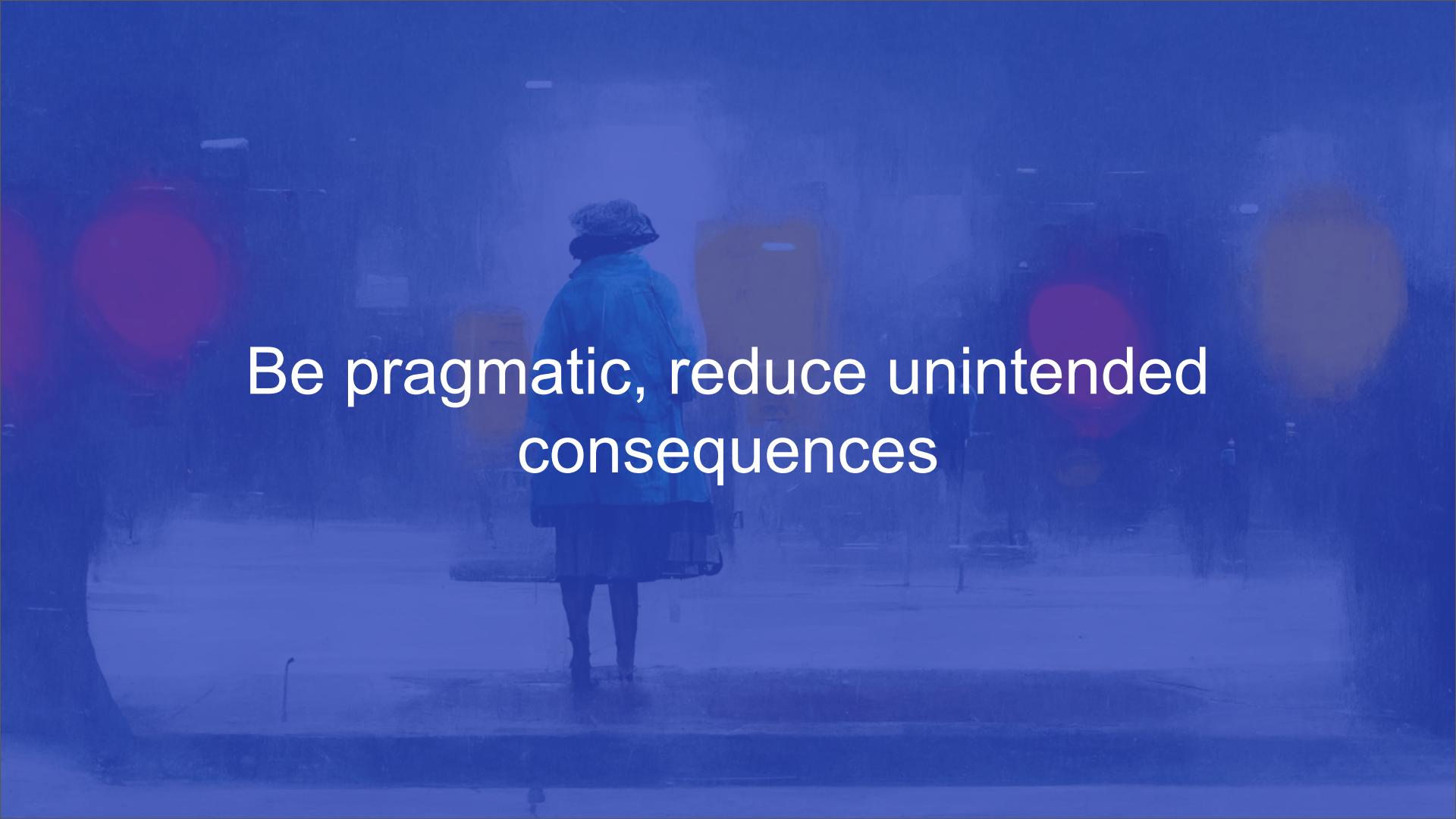
Accept that eradication is not the goal

A photograph of a multi-story building under construction. The entire structure is covered in a dense, intricate network of scaffolding and steel reinforcement beams. The building's facade is visible through the openings in the scaffolding, showing the internal framework. The sky above is overcast and grey.

Support use reduction with other measures

A young boy with short brown hair is sitting on a red and blue inner tube in a swimming pool. He is facing away from the camera, looking towards the edge of the pool. The water is blue, and there are lane lines visible in the background. The inner tube is partially submerged.

Make risky behaviors less risky

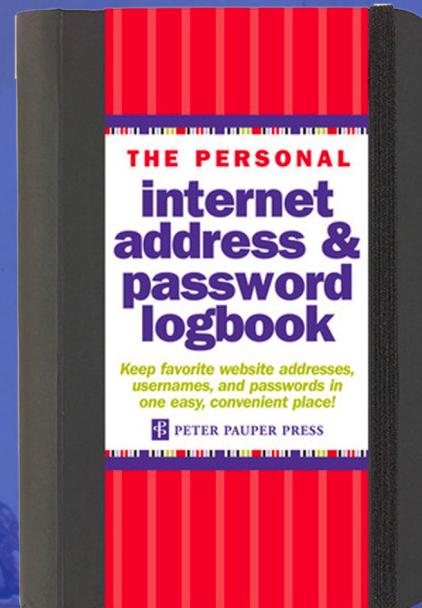
A person wearing a dark coat and a hat stands in a dark, industrial or construction site. They are positioned in front of a large, dark structure, possibly a storage tank or piece of machinery. The background is filled with various pipes, scaffolding, and structural elements, all partially obscured by deep shadows and low light. The overall atmosphere is mysterious and somber.

Be pragmatic, reduce unintended
consequences

Example #1

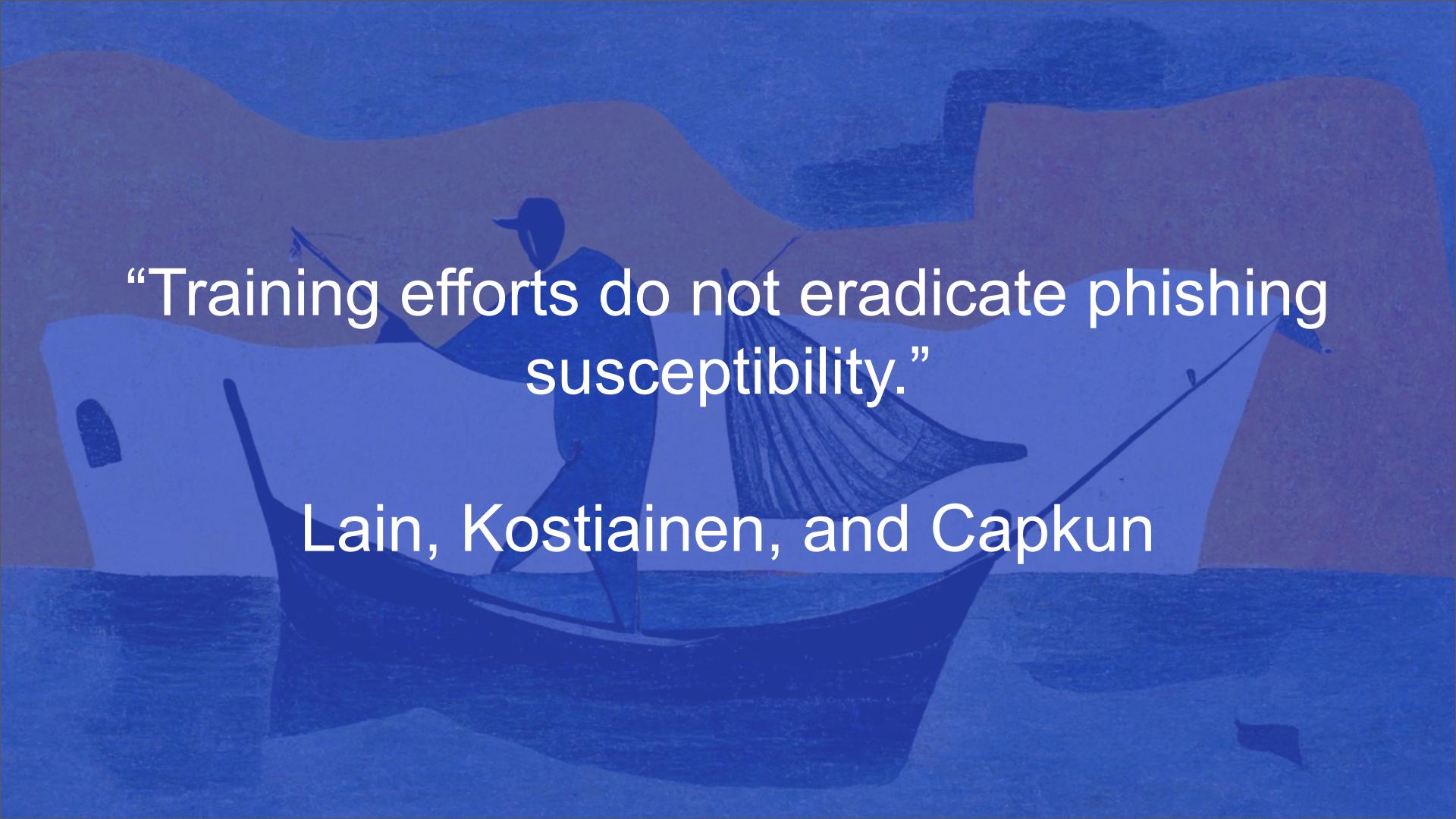


Example #2



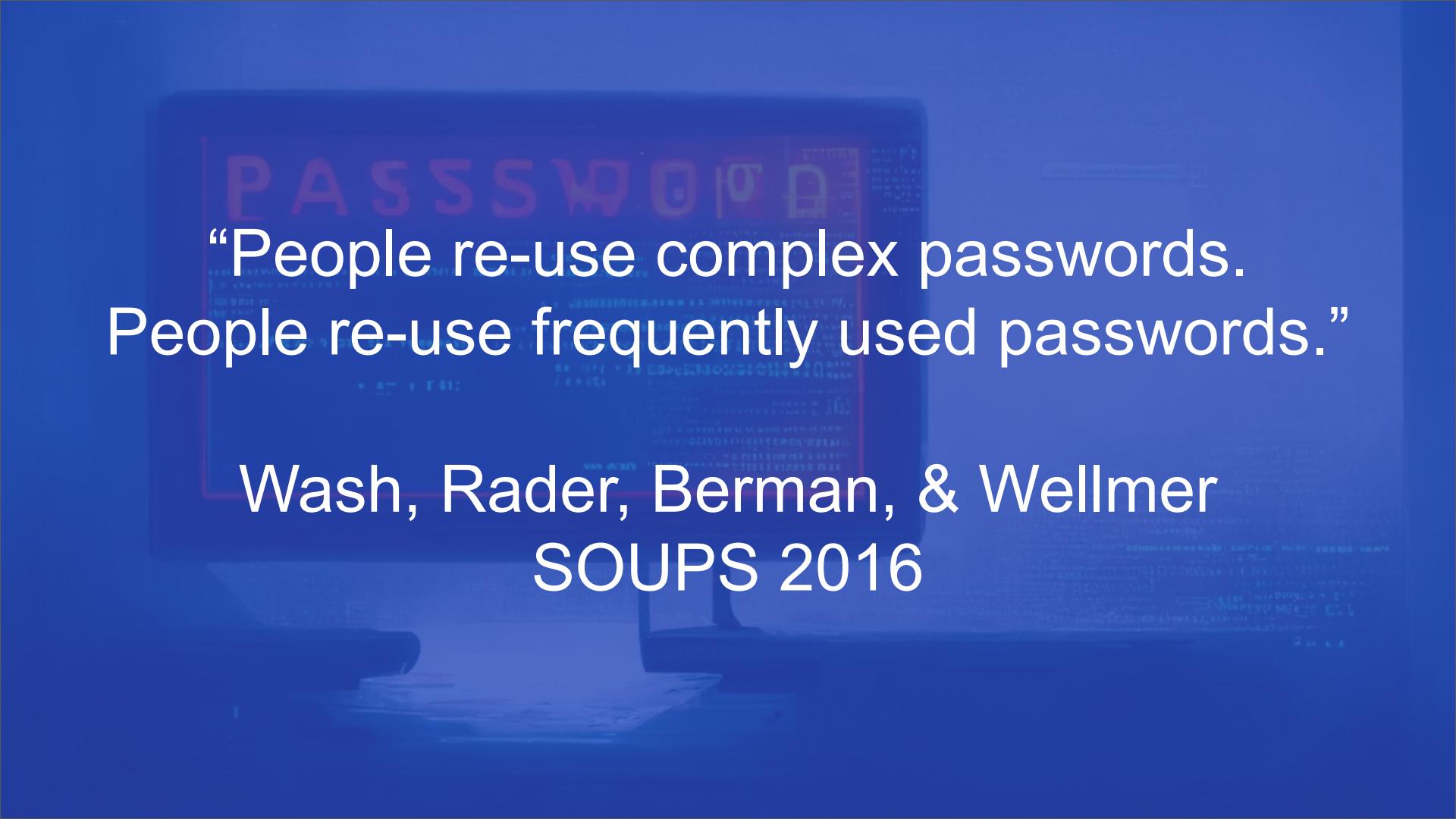
Example #3





“Training efforts do not eradicate phishing susceptibility.”

Lain, Kostiainen, and Capkun



“People re-use complex passwords.
People re-use frequently used passwords.”

Wash, Rader, Berman, & Wellmer
SOUPS 2016

- 
1. Accept that risk taking behaviors are here to stay
 - 2. Prioritize reduction of negative consequences**
 3. Embrace compassion while providing guidance

A classroom scene with many children in the background, all with their hands raised. A young boy in the foreground, seen from behind, also has his hand raised. The lighting is warm and focused on the boy in the foreground.

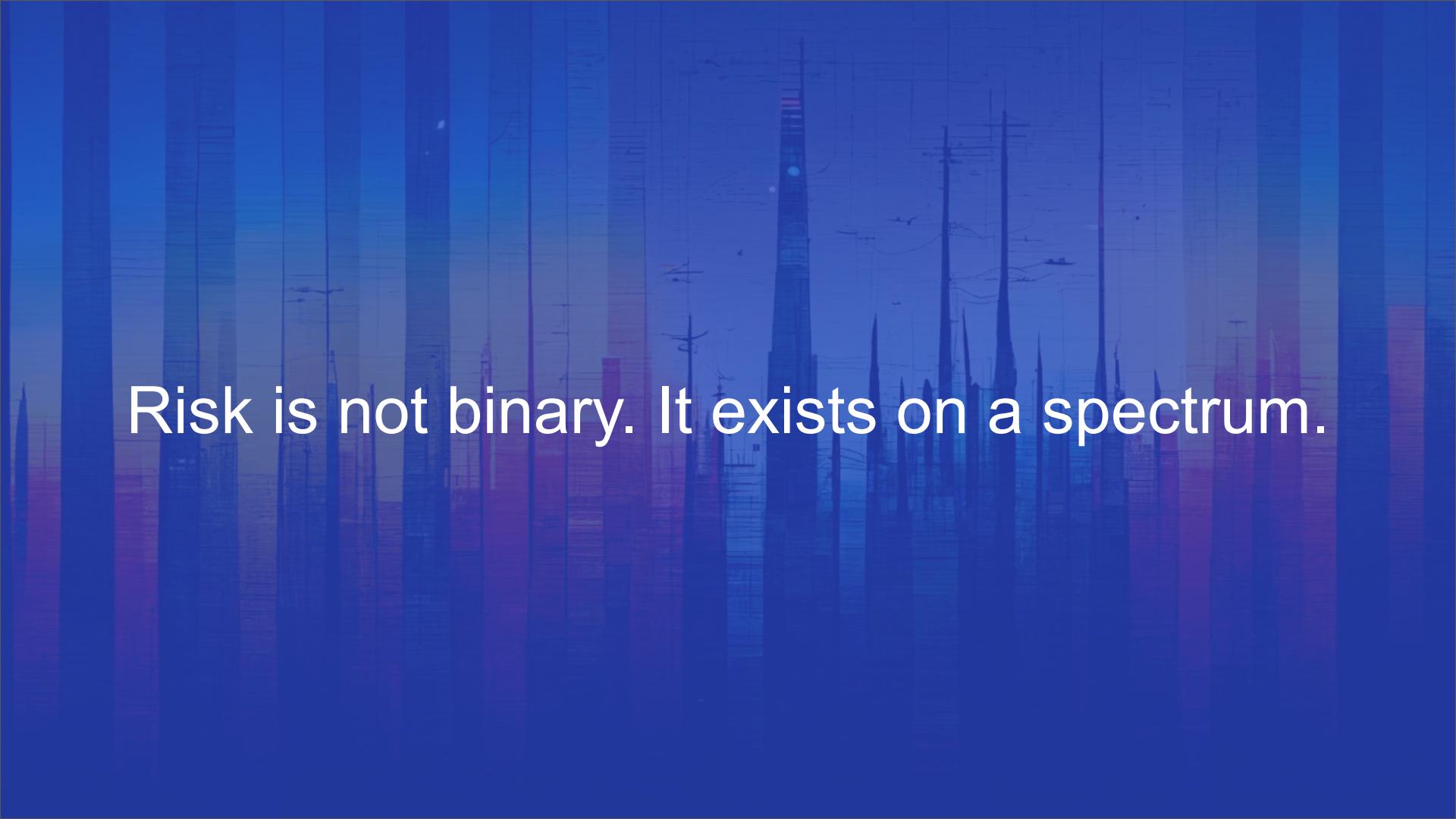
Why?

A dark, atmospheric image featuring two Terminator T-800 models. The main robot is in the foreground, its metallic face and red glowing eyes partially obscured by shadows. Its mechanical arm is visible on the left. In the background, another similar robot is partially visible, also in shadow. The overall mood is mysterious and foreboding.

Eradication is not possible

A large, dense crowd of people is shown from behind, looking towards a bright horizon. The scene is bathed in a blue light, creating a hazy, collective atmosphere.

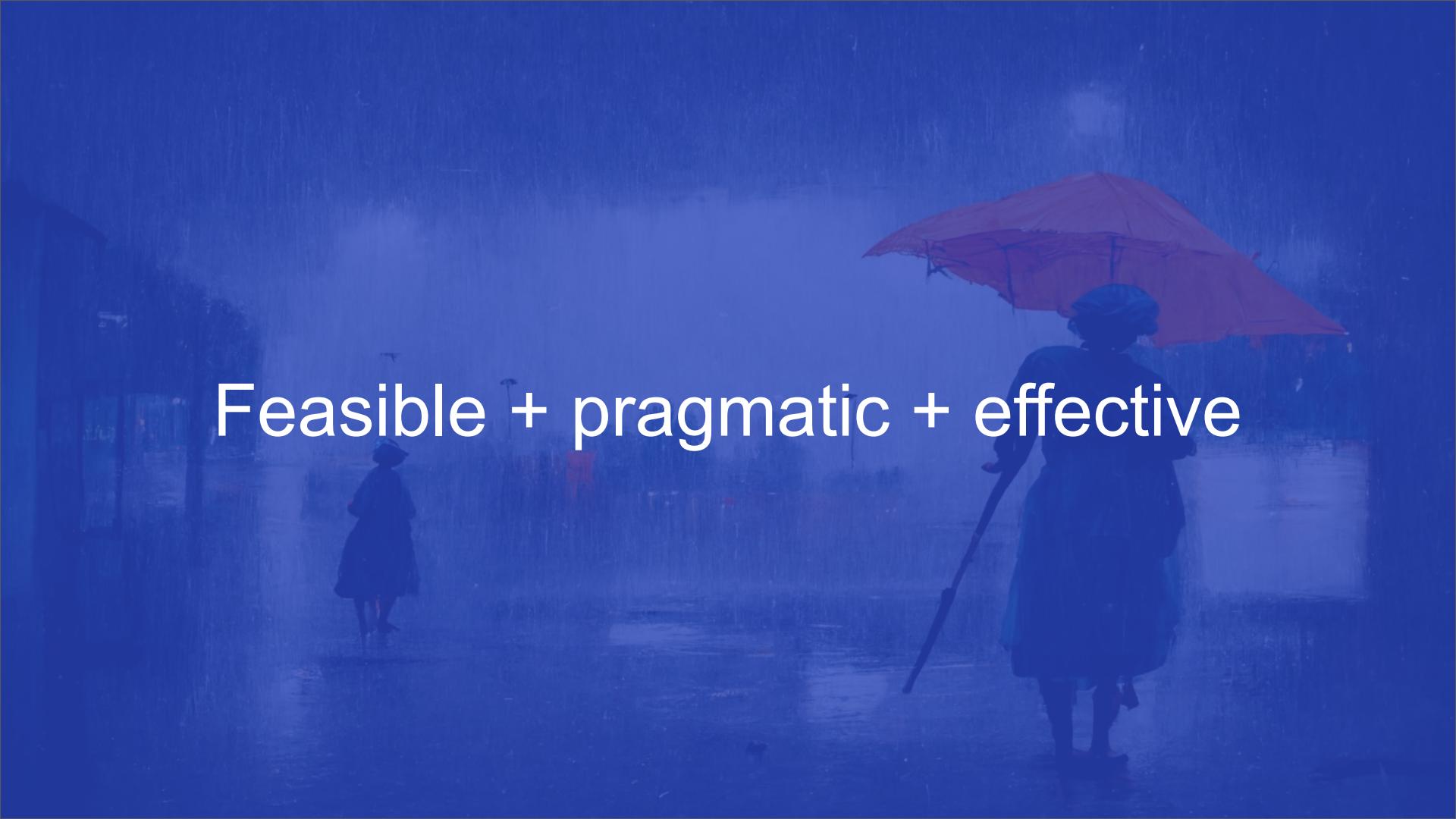
Individuals who cannot abstain take risks for
themselves AND the population



Risk is not binary. It exists on a spectrum.

A blurred background image showing several people walking away from the viewer on a city street. The scene is framed by a series of vertical color bars on the left, transitioning from dark purple to bright blue.

Any steps on risk spectrum towards lower
harm are valuable

A photograph of a person walking away from the camera in a heavy rain. The person is holding a large red umbrella. The scene is dimly lit, with the red of the umbrella being the most prominent color. The background is dark and blurry.

Feasible + pragmatic + effective

A photograph of a couple standing in a city at night, viewed from behind. They are looking towards a bright, colorful city skyline. The woman has her arm around the man's shoulder. The scene is lit with a warm, golden glow from the city lights.

Harm reduction & use reduction
work together

What does the research show?

- E-cigarettes in UK v USA
 - USA banned. UK regulated.
 - In USA: High concentration, marketing to minors, black market products, > 50 deaths
 - In UK: Lower concentration, Youth usage 4x lower, used in smoking cessation, 0 deaths
- Virginity pledges
 - Teens who pledge equally likely to have sex
 - Teens who pledge less likely to use contraception, less likely to test for STDs, have STDs for longer
- War on Drugs (the birthplace of harm reduction)
 - Syringe sharing reduces new HIV infections by 70%
 - Safe injection sites decrease overdoses by 35%
 - Access to Naloxone reduces overdoses by 11%

A photograph showing a group of soldiers in a dimly lit, cluttered room, possibly a tent or a temporary shelter. They are gathered around a large, flat map spread out on a table. One soldier in the foreground is pointing at the map, while others look on. The scene is filled with shadows and the glow of artificial light, creating a somber and focused atmosphere.

Use reduction must be supported with
additional strategies



Design treatments that reduce that harm

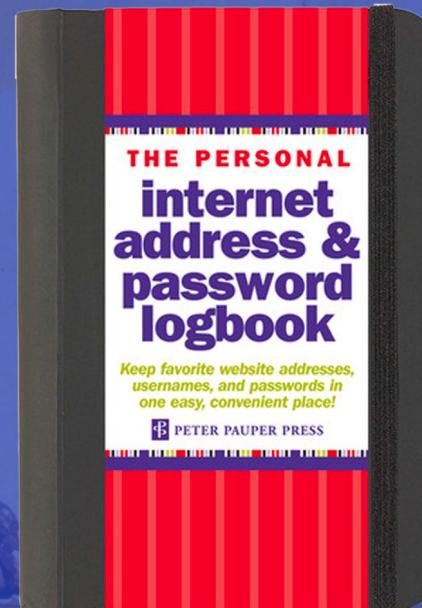
A dark, atmospheric painting of a castle or fortification. The structure is built of stone and features multiple towers, arches, and a central building with a prominent dome. The sky is filled with heavy, dark clouds, and the overall mood is somber and mysterious.

Similar to defense in depth

Example #1



Example #2



Example #3





Commentary

It is Time to Teach Safe Sexting

Justin W. Patchin, Ph.D. ^{a,*}, and Sameer Hinduja, Ph.D. ^b

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Article history: Received October 21, 2019; Accepted October 21, 2019



“Never include your face”

“Make sure that your communications are in a secret chat with self-destructing messages set to a short timeframe.”

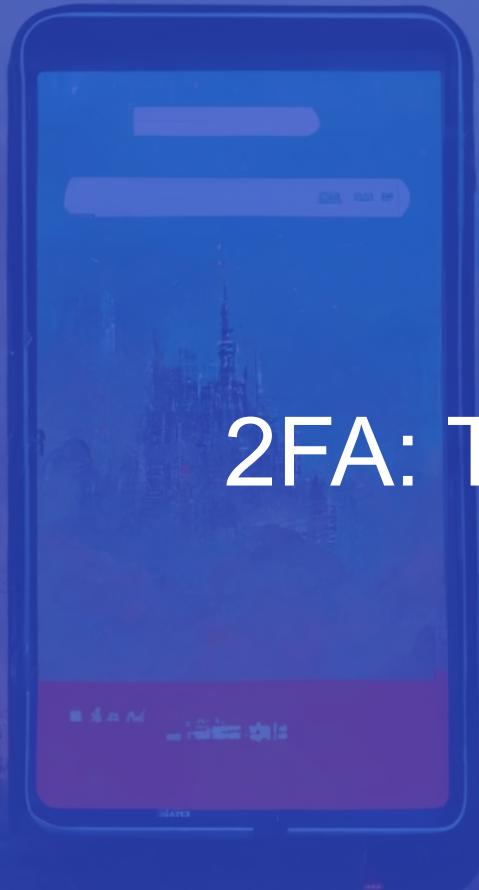
EFF

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Telegram Harm Reduction for Users in Russia and Ukraine

BY EVA GALPERIN | MARCH 4, 2022

A graphic illustration featuring several black silhouettes of people walking across a green rectangular background. Each person is holding a small white smartphone in their right hand. The silhouettes are of different sizes and positions, suggesting a group of users. The overall image conveys the theme of communication and user interaction.



2FA: TOTP > SMS > Nothing

A painting of a man and a woman. The man, on the left, has dark hair and is wearing glasses. He is looking towards the right. The woman, on the right, has dark hair and is looking towards the left. They appear to be in a close, intimate conversation.

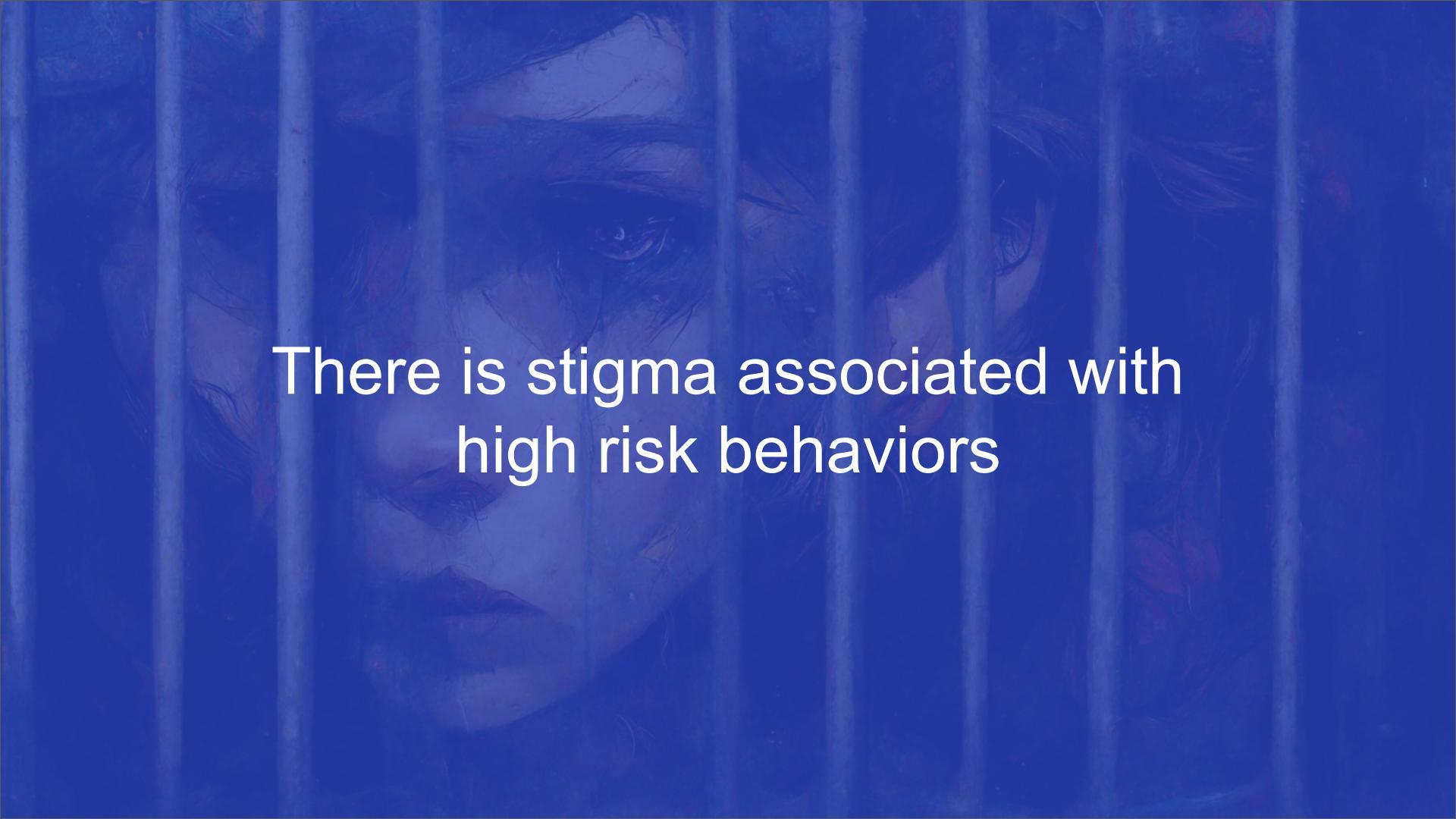
~~Don't do that~~

Try not to do that, but if you do then here are
some ways to be safe

- 
- A blurred background image of a classroom setting. Students are seated at their desks, facing forward. The room has colorful decorations on the walls, including what look like flags or streamers. The overall atmosphere is one of a typical classroom environment.
1. Accept that risk taking behaviors are here to stay
 2. Prioritize reduction of negative consequences
 - 3. Embrace compassion while providing guidance**

A painting depicting a classroom scene. Numerous children, both boys and girls, are seated at their desks, all with their right hands raised high in the air. The room has a traditional feel with wooden desks and chairs. A large, framed picture hangs on the wall in the background. The lighting is somewhat dim, creating a focused atmosphere on the raised hands.

Why?

A close-up photograph of a woman's face, framed by thick, vertical metal bars. Her eyes are wide and filled with distress, looking directly at the viewer. Her hair is dark and messy, and she appears to be wearing a light-colored garment. The lighting is dramatic, with strong highlights and shadows. The overall mood is somber and suggests themes of confinement, hopelessness, or despair.

There is stigma associated with
high risk behaviors



Stigmatizing can break down defenses

The background of the image is a dark, moody scene. In the center, there is a large, ornate floral headdress or crown, possibly made of dried flowers and leaves, mounted on a stand. Several figures are visible; one figure in the foreground is wearing a dark, flowing garment. Another figure is seen from behind, carrying a large basket or object. The ground is covered in fallen leaves and petals in shades of orange, yellow, and red. The overall atmosphere is mysterious and ethereal.

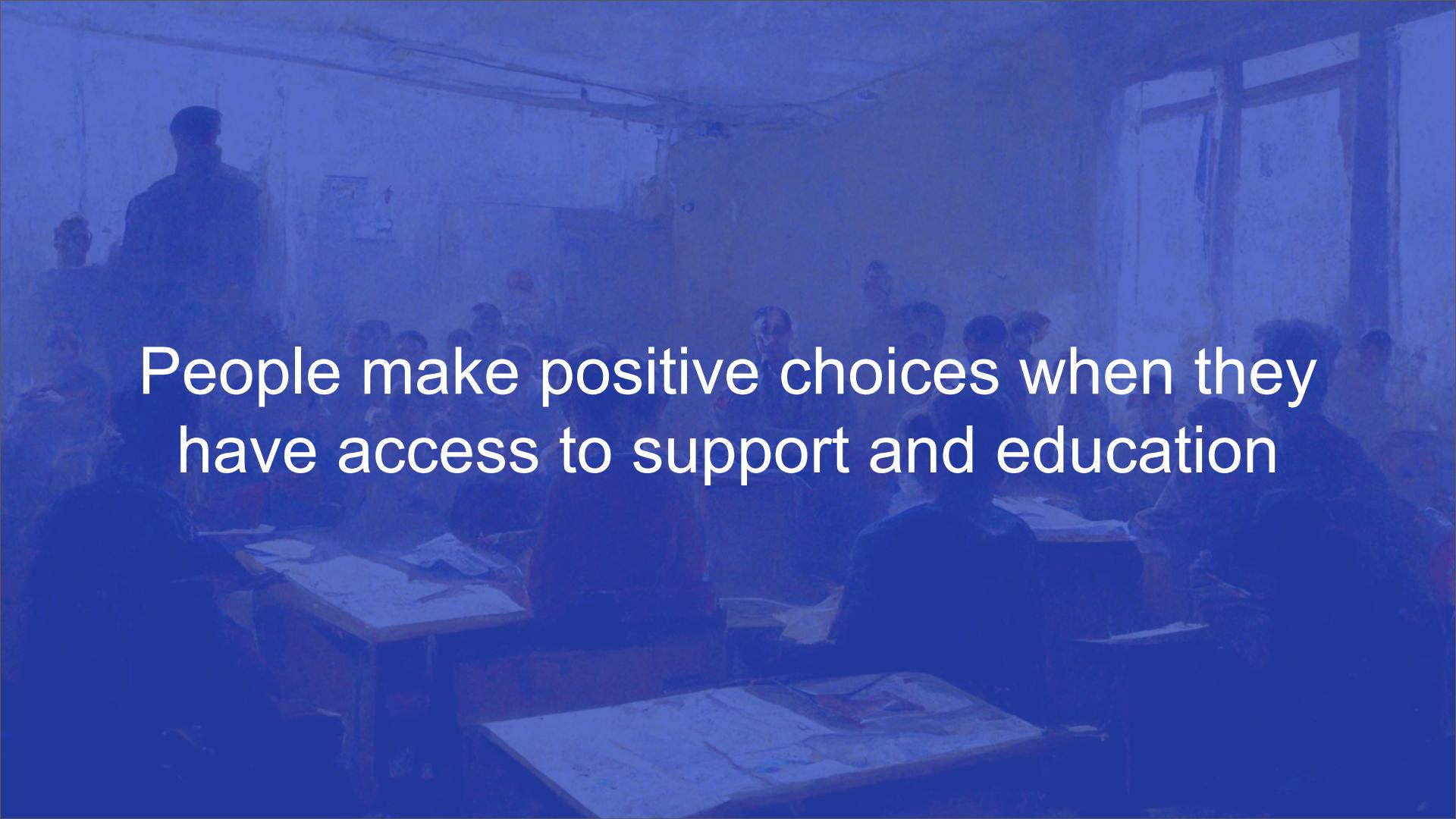
Empathy & compassion > confrontation

A photograph of a woman with curly hair, wearing a red top, holding a baby wrapped in a light-colored blanket. The baby is sleeping peacefully. The background is slightly blurred, showing an indoor setting with a window and some furniture.

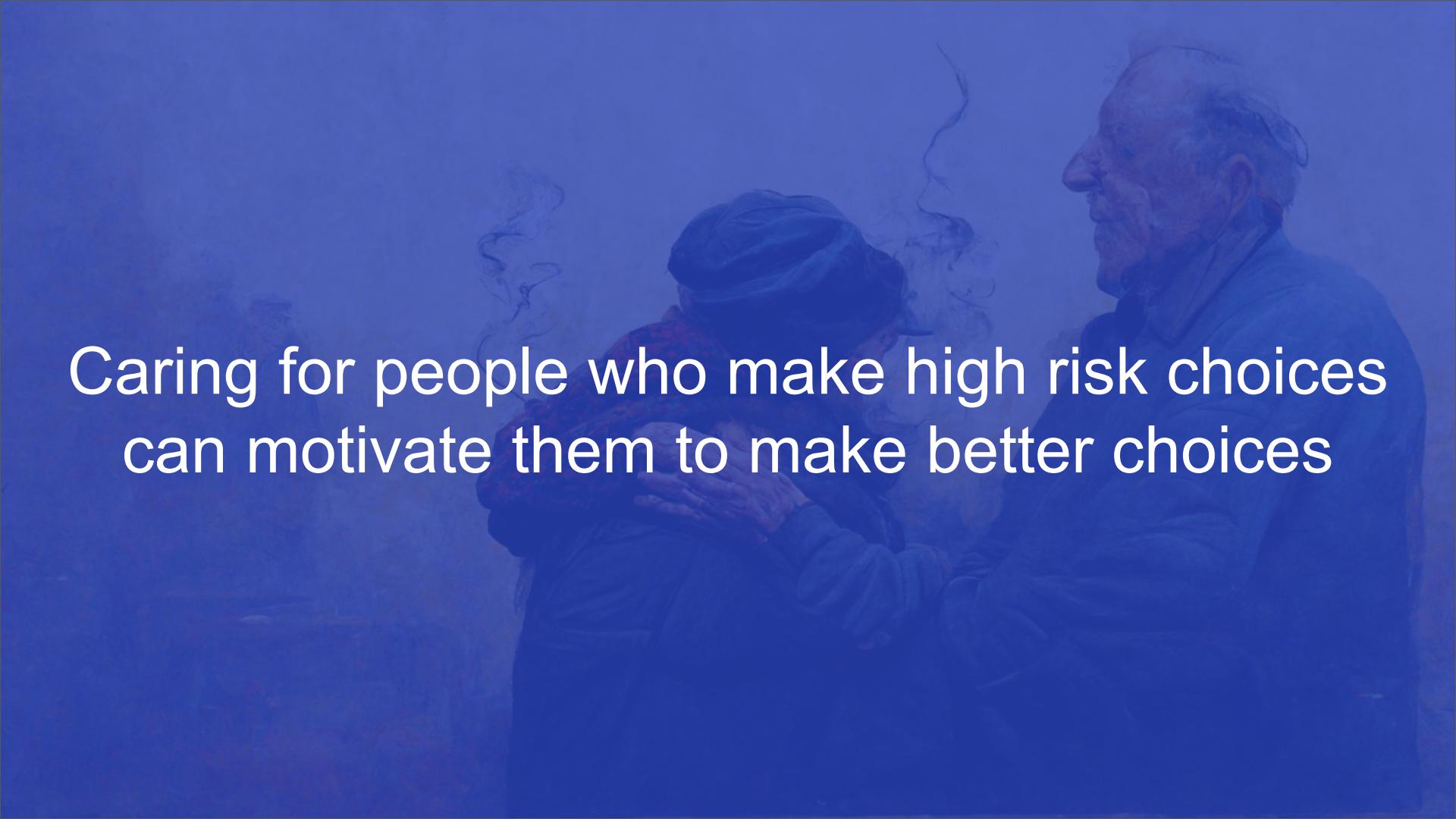
Compassion includes
improving quality of life

A dark, moody landscape featuring a winding river or path through a valley. In the foreground, the silhouettes of two people are shown from behind, holding hands. The background consists of large, dark, craggy rock formations and a misty sky.

Encourage change through collaboration,
accessibility, and kindness

A photograph of a classroom in a developing country. A male teacher stands at the front of the room, facing a group of approximately 20 students who are seated at simple wooden desks. The room has a high ceiling with visible pipes and a single window on the right side. The lighting is dim, creating a somber atmosphere.

People make positive choices when they have access to support and education

A photograph showing a group of people gathered around a campfire at night. The scene is dimly lit, with the primary light source being the fire itself, which creates a warm glow and illuminates the faces of the people. Smoke rises from the fire, creating wispy clouds against the dark background. The people appear to be in a social setting, possibly a community or group activity.

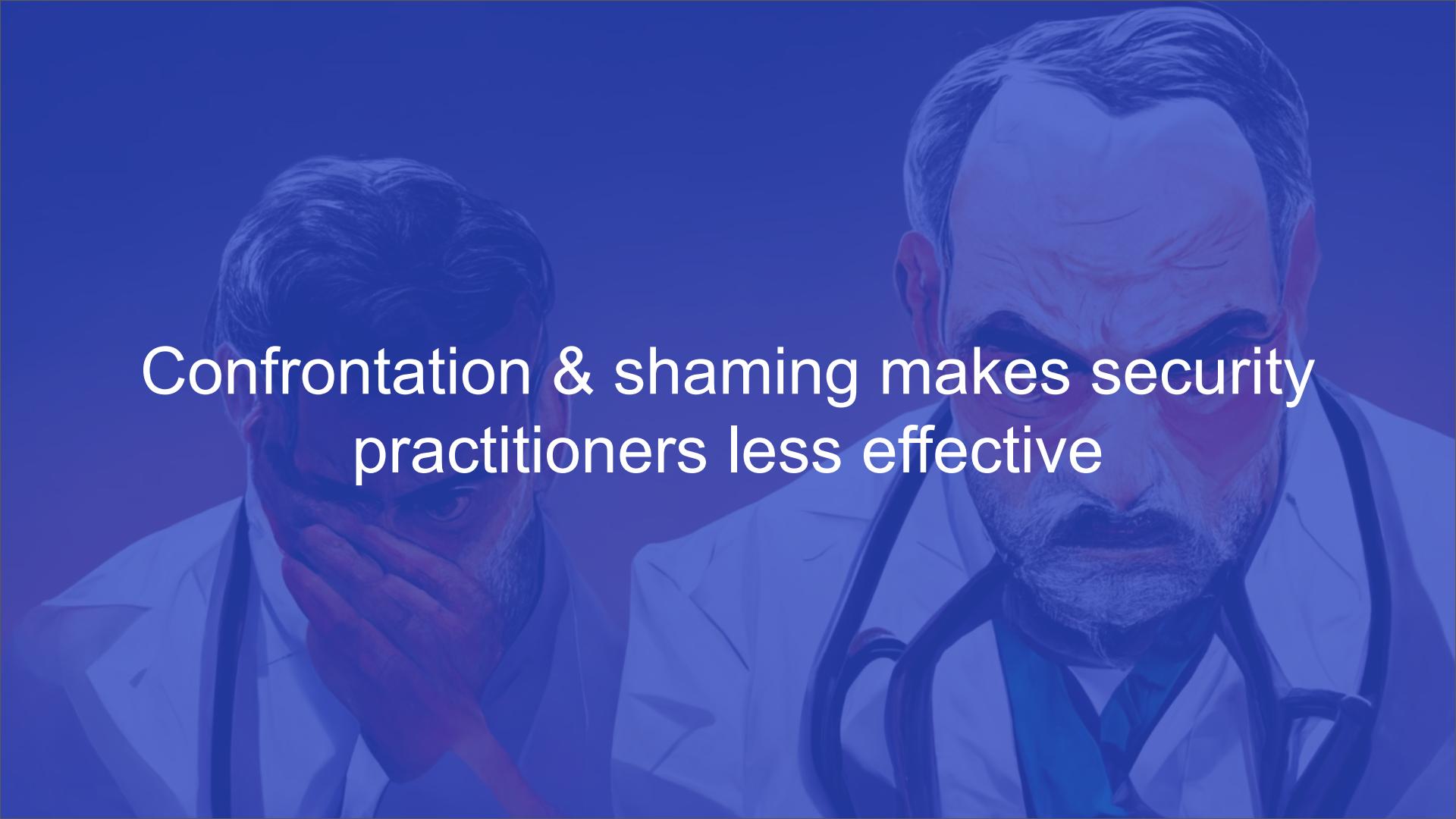
Caring for people who make high risk choices
can motivate them to make better choices

A firefighter in full protective gear, including a helmet and oxygen tank, is silhouetted against a bright, smoky background. The firefighter appears to be working on a structure or clearing debris. The scene is filled with thick, billowing smoke and fire, creating a dramatic and dangerous atmosphere.

Caring for people is more fun, it reduces
burnout and improves practitioner efficacy

What does the research show?

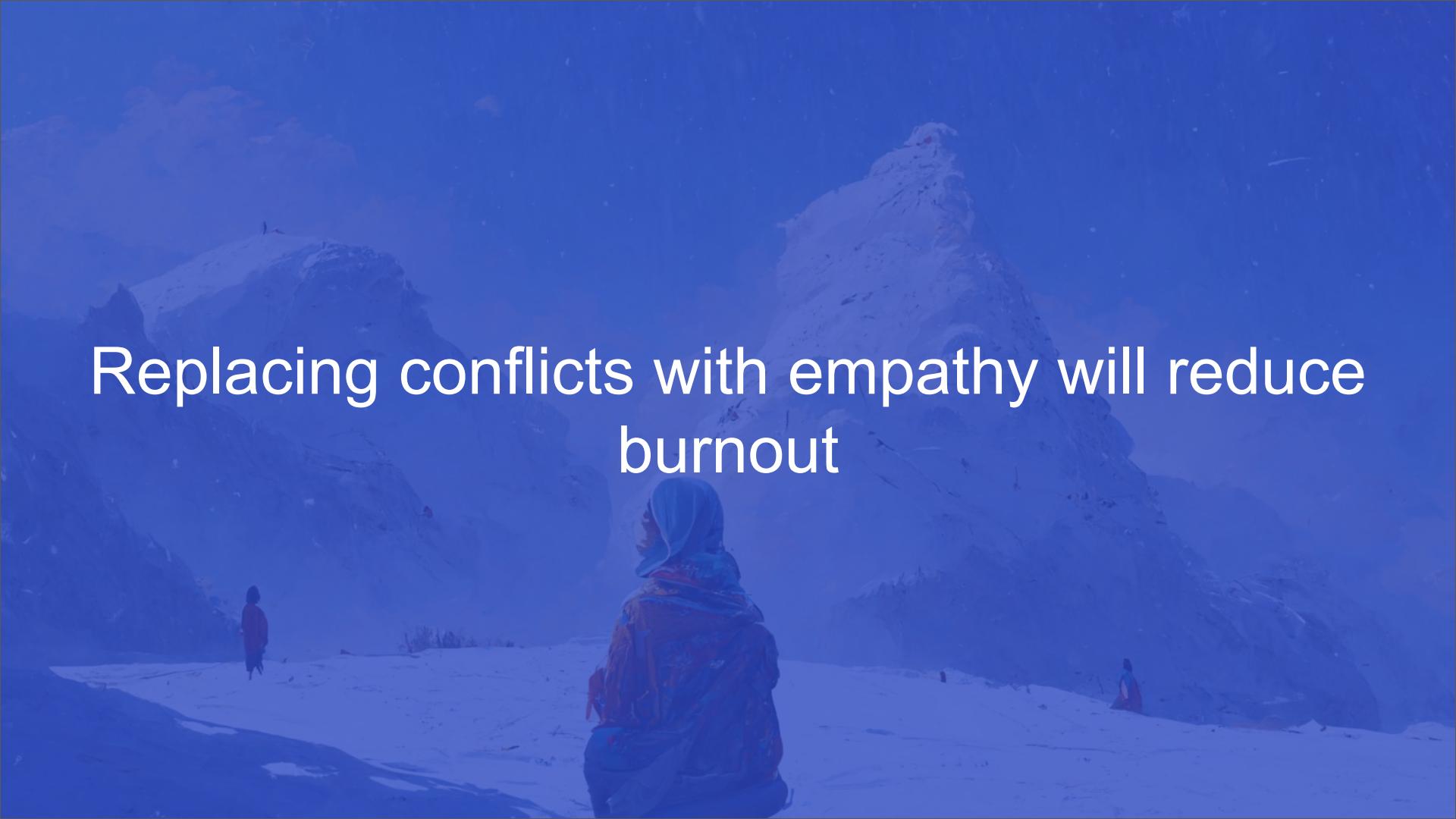
- Shaming and stigmatizing reduce efficacy, increase harm
 - Scared straight increased crime amongst participants up to 28%
 - HIV-related stigma causes lower rates of testing, treatment engagement, and medication adherence.
 - Obesity-related stigma reduces motivation, and engagement in treatment, increasing weight and obesity related health problems.
- Compassionate care improves trust, reduces harm
 - Diabetes patients with compassionate doctors showed increased adherence to guidance, 40% less likely to have complications, 80% more likely to have optimal blood sugar control
 - Patients who trust their physicians show 47% less brain activity in pain centers
- Compassion makes practitioners more effective
 - Non-adherence to health care guidance costs USA \$100-\$300 billion annually.
 - Compassionate communication leads to 62% higher odds of patient adherence to treatment
 - Doctors with poor patient relationships 22x more likely to experience burnout, burnout reduces quality in 33% of all doctors.

A photograph of two men in white lab coats. The man on the left has his hands clasped near his face, appearing distressed or overwhelmed. The man on the right has his head down and is also looking distressed. They are set against a dark blue background.

Confrontation & shaming makes security
practitioners less effective



Compassion will make security
practitioners more effective

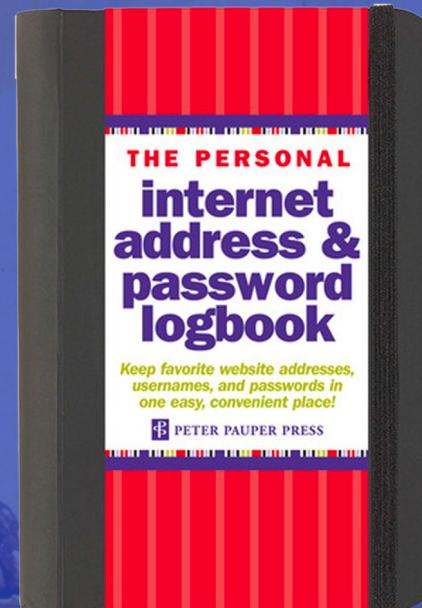
A photograph of a person wearing a red jacket and a blue hooded scarf walking away from the camera towards a massive, snow-capped mountain range under a clear blue sky.

Replacing conflicts with empathy will reduce
burnout

Example #1



Example #2



Example #3



The background of the slide features a dark, atmospheric scene of a horse-drawn wagon. Two horses are visible, one in the foreground and another partially behind it. They are pulling a wooden wagon with large spoked wheels. The setting appears to be a dense forest or a clearing at night or in low light, with bare trees and mist visible in the background.

“Hitch your wagon to developer productivity”

Astha Singhal, AppSec Cali 2019

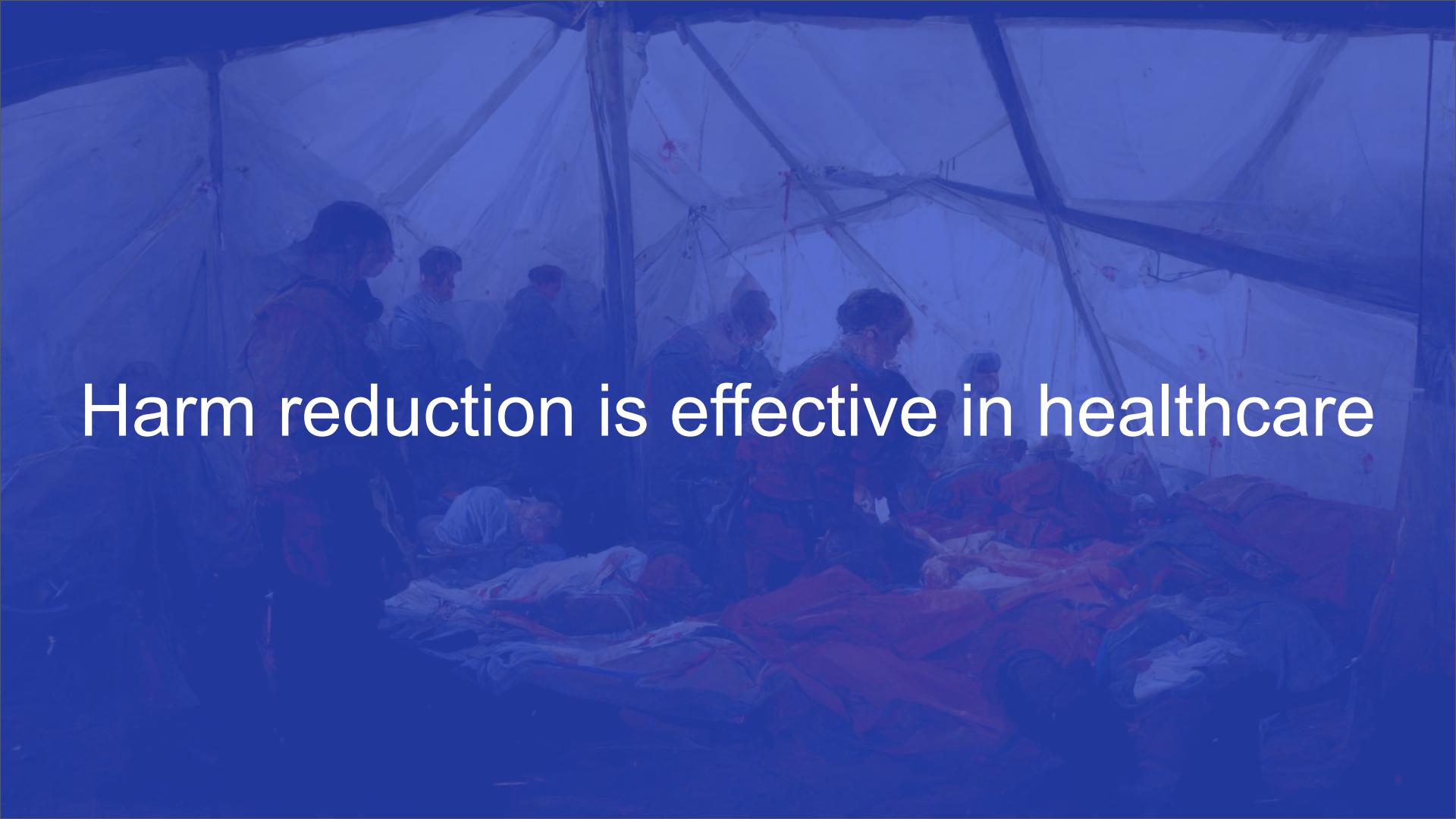
The background of the slide features a dark blue gradient. In the center, there is a faint, semi-transparent image of a stack of books on a shelf. Behind the books, several flags are visible, including the United States flag and other red, white, and blue flags, suggesting a patriotic or academic setting.

“Knowledge Shaming Is Making Us Less Secure”

Regina Blumen, Blackhat EU 2021

The background of the slide features a dark, moody city skyline at night. Several large, translucent bubbles of various sizes are suspended in the air, catching the light and creating a colorful, iridescent effect against the dark background. The city lights are visible through the haze.

Concluding thoughts

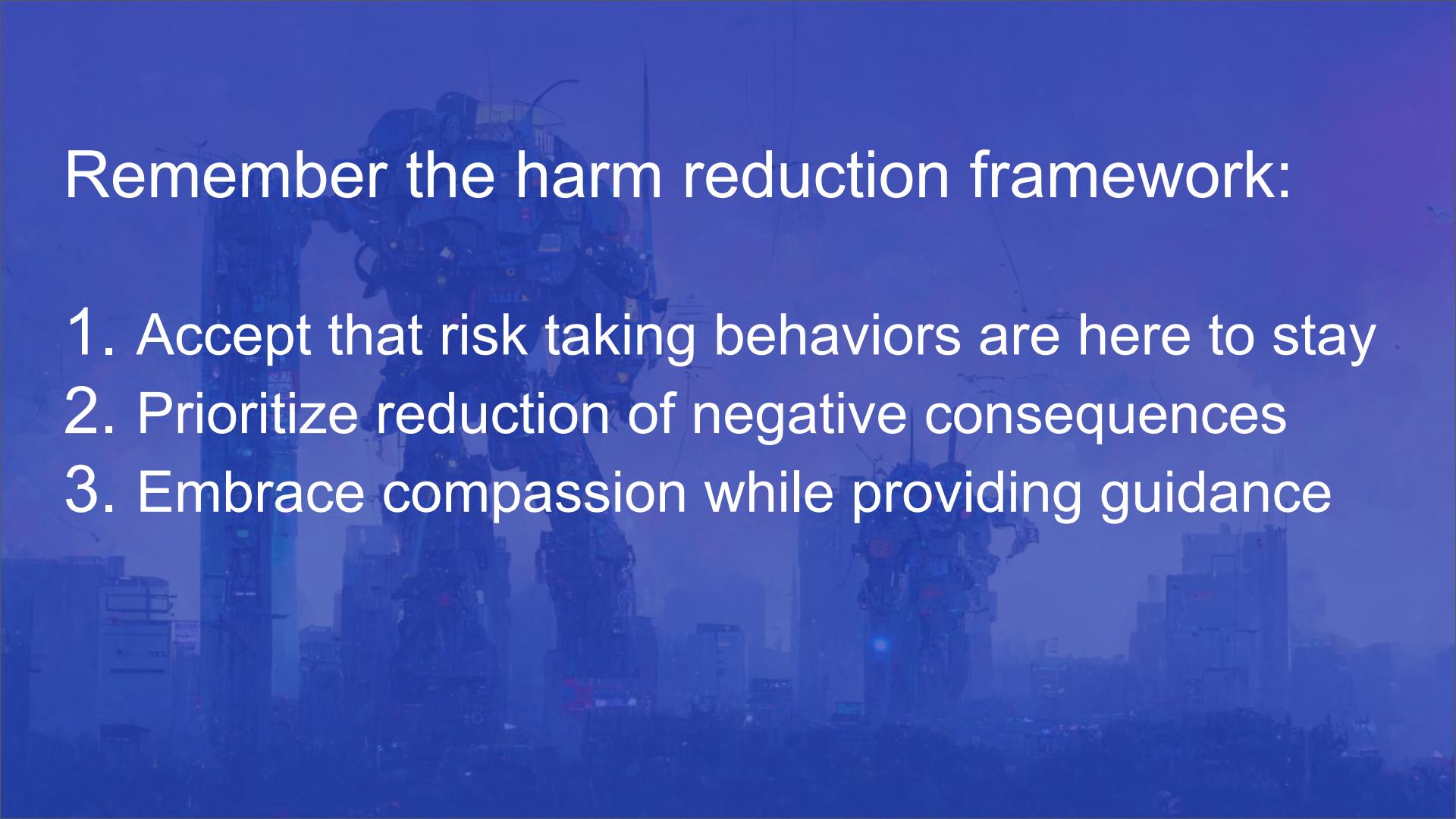
A photograph showing the interior of a large, translucent tent. Several people are visible, some sitting and some lying down, suggesting a temporary shelter or a medical facility. The lighting is dim, and the overall atmosphere is one of a makeshift environment.

Harm reduction is effective in healthcare



Incorporate harm reduction and
you could see:

- improved efficacy
- reduced costs
- reduced burnout

A large, dark, metallic robot stands in a city street at night. It has a complex, articulated body with multiple arms and what appears to be a weapon or tool attached to its left arm. The robot is positioned in front of a dense urban landscape with numerous skyscrapers and buildings. The sky is bright, creating a strong silhouette effect for the robot.

Remember the harm reduction framework:

1. Accept that risk taking behaviors are here to stay
2. Prioritize reduction of negative consequences
3. Embrace compassion while providing guidance



Wherever risk exists on a spectrum
harm reduction has a place

A scenic landscape featuring a stone arch bridge spanning a deep valley. The valley floor is covered in lush green grass and small trees. In the background, there are several rocky mountain peaks, some with sparse vegetation and others with dense forests. The sky is clear and blue, suggesting a bright day.

Don't do that

Try not to, but if you do then here are some ways to be safe

Questions?

Contact info:

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[Linkedin.com/in/kyletobener/](https://www.linkedin.com/in/kyletobener/)

The background of the slide is a dark, atmospheric landscape. In the foreground, there are several large, dark, craggy mountain peaks. Several red flags are flying through the air, some attached to thin wires or lines that appear to be falling from the sky. The overall mood is mysterious and somber.

Additional Notes

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Background Art

All images contained in the slides were generated using MidJourney AI v3.

If you'd like to see how I did this I'll post a walkthrough on Twitter after Blackhat: [@kylekyle](https://twitter.com/kylekyle)